Central Texas Freshwater Mussels

Kimberly A. Horndeski

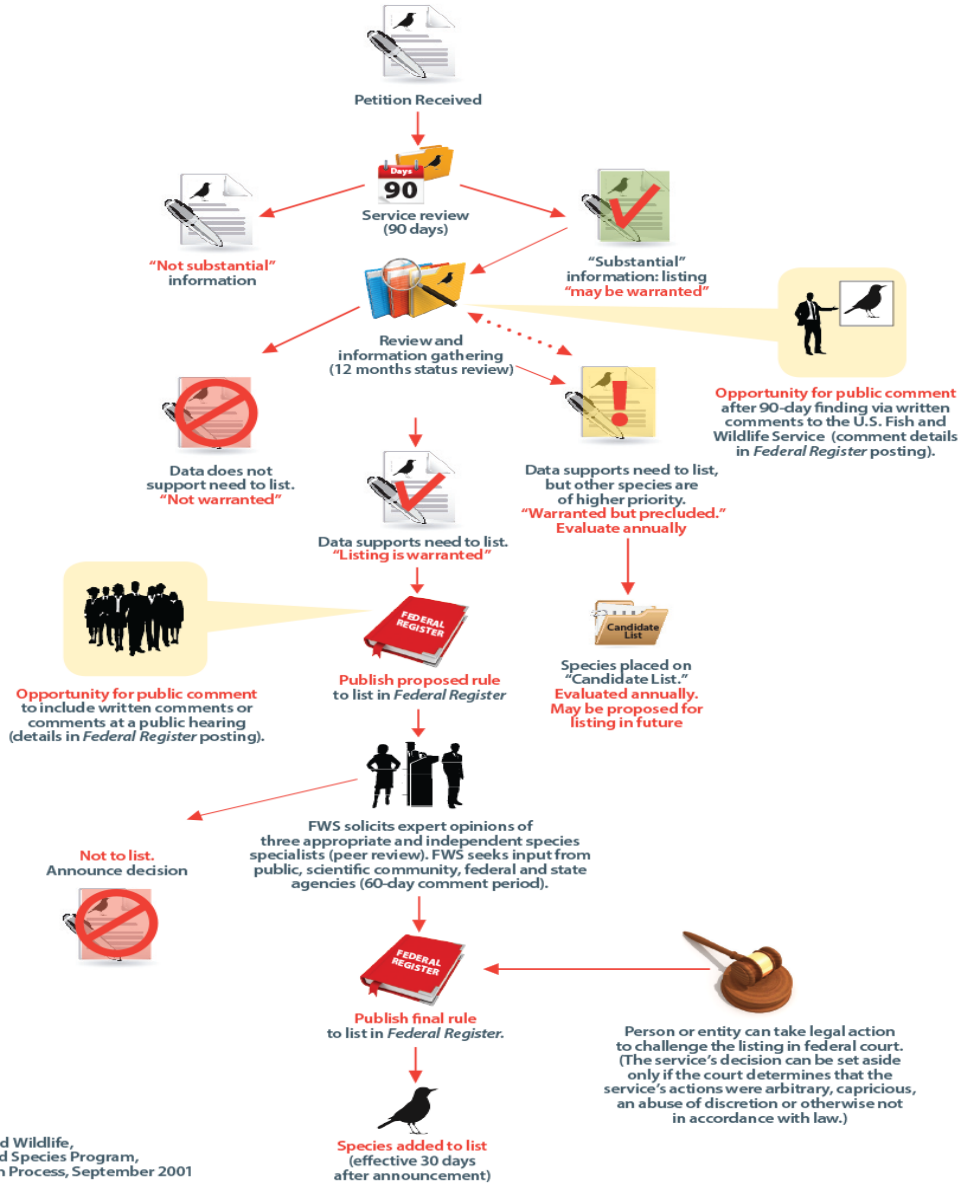
Economic Growth and Endangered Species Management Division

The goal of the Economic Growth and Endangered Species Management Division is to protect the Texas economy and to ensure compliance with the federal Endangered Species Act regulations.

The Listing Process

A species is evaluated on the following factors for the listing process:

1. Present or threatened destruction, modification, or curtailment of its habitat or range;
2. Overutilization for commercial, recreational, scientific, or educational purposes;
3. Disease or predation;
4. Inadequacy of existing regulatory mechanisms;
5. Other natural or manmade factors affecting its survival.



Source:
U.S. Fish and Wildlife,
Endangered Species Program,
The Petition Process, September 2001

Species Research Program

Priorities are identified based on the following factors:

- Immediacy of the listing decision
- Existing data gaps
- Potential impacts of listing

Research is designed to ensure science is available for listing decisions and for the development of any voluntary conservation efforts

Mussels in Texas

Mussel Species	Package Name and Grouping	Historical Range in Texas River Basin	Federal ESA Listing Status
False Spike	Central Texas Mussels (2018)	Brazos, Colorado, Guadalupe	Petitioned
Texas Fatmucket		Colorado, Guadalupe	Candidate
Texas Pimpleback		Colorado, Guadalupe	Candidate
Texas Fawnsfoot		Brazos, Colorado	Candidate
Triangle Pigtoe	East Texas Mussels (2019)	Neches, San Jacinto	Petitioned
Louisiana Pigtoe		San Jacinto, Trinity, Neches, Sabine	Petitioned
Texas Heelsplitter		Neches, Trinity, Sabine	Petitioned
Golden Orb	Texas Quadrula Species (2020)	Guadalupe, San Antonio, Nueces-Frio	Candidates
Smooth Pimpleback		Brazos, Colorado	Candidate
Mexican Fawnsfoot	Rio Grande Mussels (2022)	Rio Grande, Pecos, Rio Salado	Petitioned
Salina Mucket		Rio Grande	Petitioned
Texas Hornshell	-	Rio Grande	Proposed Endangered

FWS 12-Month Finding

- All mussels likely face the same or very similar threats
- Decline of mussels in Texas and throughout the U.S. is mainly due to **habitat loss and degradation** primarily caused by:

  - **Impoundments**
  - **Sedimentation**
  - **Dewatering**
  - **Sand and gravel mining**
  - **Chemical contaminants**

- Additional factors – nonnative species, climate change, inadequacy of existing regulatory mechanisms

Impoundments

- Fluctuation in flow regime
- Scouring and erosion
- Impaired water quality
- Changes in reproductive cycle
- Decreased DO and temperature
- Increased sedimentation

Sedimentation

- Livestock access, grazing
- Removal of vegetation
- Urbanization, population growth
  - Increased impervious surface
  - Construction
  - Road crossings

Dewatering

- Surface water diversions
- Groundwater pumping
- Hydropower facilities
- Construction
- Drought

Chemical Contaminants

- Chemical spills
- Industrial waste
- Municipal effluents
- Animal feedlots
- Fertilizer use
- Pesticide use
- Emerging contaminants

Sand and Gravel Mining

- Channel degradation and erosion, turbidity, bank and stream instability
- Changes in water flow, temperature, quality
- Increased fine sediment, suspended sediment

Objectives

Ensure accurate science is available to inform listing decisions

If listings occur, ensure that compliance is cost-effective

Assist in the development of voluntary conservation measures if stakeholders are interested in pursuing

Texas State University Research

- Surveys throughout historical range– combined with other efforts to determine distribution
  - Brazos River
    - Little River drainage
    - Upstream from Possum Kingdom Reservoir (main-stem and tributaries)
  - Colorado River
    - Lower Colorado River (Between Longhorn Dam and Bay City Dam)
    - Middle Colorado River (Between O.H. Ivie Lake and Lake Buchanan)
  - Upper Guadalupe River
    - Upstream of Canyon Lake (main-stem and tributaries)

Texas State University Research

Long-term captive propagation study to gather information needed for future reintroduction efforts

Texas A&M University: Central and West Texas

- Surveys within historical range– developed conservation maps for selected species (completed)
  - False spike (*Brazos, Colorado, Guadalupe*)
  - Mexican fawnsfoot (*Rio Grande*)
  - Golden orb (*Guadalupe, San Antonio, Nueces-Frio*)
  - Smooth pimpleback (*Brazos, Colorado*)
  - Salina mucket (*Rio Grande*)
  - Texas fatmucket (*Colorado, Guadalupe*)
  - Texas fawnsfoot (*Brazos, Colorado*)
  - Texas pimpleback (*Colorado, Guadalupe*)

- Genetic analysis to resolve the taxonomic status of the Golden orb and Smooth pimpleback

Freshwater Mussel Work Group

- Stakeholder meetings cover a variety of topics including:
  - Listing status updates
  - Discussions about options for voluntary conservation
  - Research updates
- Primarily focused on the species with 2018 listing decision deadline.

Upcoming Webinar

September 20, 2017



Kimberly A. Horndeski

Economic Growth and Endangered Species Management Division
Kimberly.Horndeski@cpa.texas.gov
(512) 305-9827